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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/644,667	08/24/2000	Luis Felipe Cabrera	MSFT-0160/142385.1	5398

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EXAMINER	
SCHRANTZ, STEPHEN D	
ART UNIT	**PAPER NUMBER**
2177	6

DATE MAILED: 04/28/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

PR4

Office Action Summary	Application No.	Applicant(s)	
	09/644,667	CABRERA ET AL.	
	Examiner	Art Unit	
	Steve Schrantz	2177	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 February 2003* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-45* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-45* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *24 August 2000* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-8, 12-13, 16, 21-23, 27-35, and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ofek et al. (U.S. Patent 6,385,706) and Coy et al. (U.S. Patent 5,644,766).

3. Ofek teaches independent claim 1 by the following:

"identifying at least one portion of the stream of data for migration to the second storage location" at col. 9 lines 54 to col. 10 line 20. Ofek teaches that the updated data blocks are identified and transmitted [migrated] in order to update the backup copies. The identification of at least one portion of the stream of data could also include migration of the entire file [all portions of the stream of data are migrated]. As for the migration aspect of the claim, Ofek teaches that the secondary storage node could serve as a hierarchical storage management at col. 41 lines 15-18. The hierarchical storage management is a form of migrating data to a slower access medium. The data is moved in order to create more space for other objects that would benefit from being stored on the quicker access mediums [the primary source location in the case of an hierarchical storage management system (HSM)].

"migrating said at least one portion to said second storage location, wherein said migrating includes" at col. 9 lines 16-24. Ofek teaches that the data can be transferred [migrating in terms of the HSM described at col. 41 lines 15-18] from a primary location to a secondary storage node [location].

"(B) generating additional file system metadata relating to said stream of data" at col. 24 lines 1-28. Addition file system metadata is created for the blocks of data. The metadata re-maps the data blocks [stream of data] in order to recombine the blocks to recreate the original file.

"preserving said stream's data relationships via said additional file system metadata" at col. 24 lines 1-28. Ofek teaches two metadata tables that are needed to restore the data. The abstract block table describes the migration locations of the data. The dummy metadata table describes the location of where the new information will be stored. The combination of the two tables creates a re-mapping table that describes how to restore the file.

Coy teaches the remaining aspects of independent claim 1 by the following:

"(A) relocating said at least one portion from the first storage location to the second location" at col. 1 line 65 to col. 2 line 5. The data is migrated [relocated] in order to free storage space for more information.

"whereby said entire stream of data remains accessible to a user of the file system as if said at least one portion of the stream of data were not migrated according to said migrating" at col.1 lines 25-28. The data is archived [stored in a different location] in order to free valuable storage space on the workstation. The user can continue to retrieve [access] the data that has been archived [migrated away from the workstation] as if it was not migrated. Because the user can continue to access the data, the data can be accessed as if it was not migrated.

Ofek does teach the use of his backup system as a Hierarchical Management system at col. 41 lines 15-18, but he does not specifically state that the data items are actually relocated to a different location. Ofek teaches a backing up of the data (the data is copied to a different location, so two copies of the data remain). Coy does teach an invention in which the data is relocated to a second storage location in a hierarchical storage system as taught in the title and at col. 3 lines 40-51. It would have been obvious to one ordinarily skilled in the art at the time of the invention to allow the system to move data to a second location. By relocating the data, duplicate copies of the information will not be stored. More storage space will be made available to store additional data, and the data that has been migrated will remain available to the system because of the use of the second storage location.

4. Ofek teaches dependent claim 2 by the following:

"first storage location and said second storage location are located on different volumes" at Fig. 2A.

5. Ofek teaches dependent claim 3 by the following:

"identifying of said at least one portion for migration includes identifying said at least one portion according to pre-set criteria" at col. 29 lines 10-14.

6. Ofek teaches dependent claim 4 by the following:

"identifying of said at least one portion for migration includes specifying the size of an archive unit" at col. 30 lines 14-25.

7. Ofek teaches dependent claim 5 by the following:

"identifying of said at least one portion for migration includes specifying the size of a region of updates" at col. 31 lines 33-54.

8. Ofek teaches dependent claim 6 by the following:

"identifying of said at least one portion for migration includes specifying a memory allocation limit for the stream of data applicable to said first storage location" at col. 36 line 30.

9. Ofek teaches dependent claim 7 by the following:

"moving of said at least one portion is performed without exceeding said memory allocation limit" at col. 36 lines 30-38.

10. Ofek teaches dependent claim 8 by the following:

"the stream of data has at least one identifiable region of updates" at col. 29 lines 33-36.

11. Ofek teaches dependent claims 12 and 39 by the following:

"said second [target] storage location is a sequential access medium (SAM)" at col. 34 lines 47-56.

12. Ofek teaches dependent claim 13 by the following:

"said first storage location is a local location and said second storage location is a remote location" at Fig. 5.

13. Ofek teaches dependent claim 16 by the following:

"said preserving the data relationships of said stream includes generating metadata for description of said relationships" at col. 9 lines 49-53.

14. Ofek teaches dependent claim 21 by the following:

"A computer-readable medium having computer-executable instructions for instructing a computer to perform the method recited in claim 1" at col. 37 lines 53-58.

15. Ofek and Coy teach independent 22 by the following:

"wherein said migration includes relocation of the at least one portion from the first storage location to the second location" at Coy col. 1 line 65 to col. 2 line 5. The data is migrated [relocated] in order to free storage space for more information.

"generation of additional file system metadata relating to the stream of data" at Ofek col. 24 lines 1-28. The metadata tables are generated in order to re-map the blocks [streams].

"an identifier identifying the stream of data for which at least one portion is migrated" at Ofek col. 21 lines 51-59. Ofek teaches that each block [a stream of data] is archived [migrated according to the HSM] to the second location. The metadata table includes labels [identifier] to identify each block. The mapping tables include both the label and the physical address of the block's [stream of data] location in order to identify the location of each block.

"data representative of the storage service used in connection with the migration of said at least one portion" at Ofek col. 21 lines 59-67. The data representative of the storage service is read in order to determine the location of the blocks of data.

"data representative of the memory mappings of said at least one migrated portion" at Ofek Fig. 13 and col. 21 lines 47-50. Because the metadata is able to reconstruct the order of the logical data blocks as they appear in the logical object, the metadata is representative of the memory mappings.

"whereby said entire stream of data remains accessible to a user of the file system as if said at least one portion of the stream of data were not migrated" at Coy col.1 lines 25-28. The data is archived [stored in a different location] in order to free valuable storage space on the

workstation. The user can continue to retrieve [access] the data that has been archived [migrated away from the workstation] as if it was not migrated. Because the user can continue to access the data, the data can be accessed as if it was not migrated.

16. Coy teaches dependent claim 23 by the following:

"further comprising temporal data relating to a time of migration of said at least one portion of said stream of data" at col. 4 lines 57-66.

17. Ofek teaches dependent claim 27 by the following:

"A modulated data signal for carrying information that encodes a data structure as recited in claim 22" at col. 34 lines 10-42.

18. Ofek teaches dependent claim 28 by the following:

"An application programming interface (API) for use in a computer system, whereby a stream of data may register for administration for partial migration techniques according to the method of claim 1" at col. 18 lines 17-29.

19. Ofek teaches dependent claim 29 by the following:

"An API according to claim 28, whereby said interface provides a common way to generate and store metadata in connection with the partial migration of streams of data to secondary storage" at col. 18 lines 18-21, col. 20 lines 47-51, and col. 22 lines 15-33.

20. Ofek and Coy teach dependent claim 30 by the following:

"a hierarchical storage management (HSM) system for administering a stream of data

for partial migration" at Ofek col. 14 lines 60 to col. 15 line 2. Ofek teaches the transfer of data from a primary storage node to a secondary node. Ofek also teaches that the secondary node could be part of a HSM, inferring that the data is migrated to the second location in order to free space on the primary or source location.

"a source storage location having a stream of data stored thereon being serviced by said HSM system" at col. 14 lines 60 to col. 15 line 2. The second location can be used as part of a HSM. Because the data is transferred to the second location, the source storage is being serviced by an HSM system.

"wherein said HSM system identifies and migrates at least one portion of said stream of data to a target storage location according to pre-set criteria" at col. 22 lines 57-63 and col. 29 lines 10-14. Ofek teaches a differential backup in which only a portion of the object is needed for backup. The pre-set criteria are that the object has changed. As for the migration aspect of the claim, Ofek teaches that the secondary storage node cold serve as a hierarchical storage management at col. 41 lines 15-18. The hierarchical storage management is a form of migrating data to a slower access medium. The data is moved in order to create more space for other objects that would benefit from being stored on the quicker access mediums.

"generates metadata for the description of data relationships of said at least one migrated portion" at Ofek col. 24 lines 1-28. The metadata tables are generated in order to re-map the blocks [streams] after they have been moved.

"wherein said migrating means to relocate the at least one portion from the first storage location to the second location" at Coy col. 1 line 65 to col. 2 line 5. The data is migrated [relocated] in order to free storage space for more information.

"whereby said entire stream of data remains accessible to a user of the file system as if said at least one portion of the stream of data were not migrated according to said migrating" at col.1 lines 25-28. The data is archived [stored in a different location] in order to free valuable storage space on the workstation. The user can continue to retrieve [access] the data that has been archived [migrated away from the workstation] as if it was not migrated. Because the user can continue to access the data, the data can be accessed as if it was not migrated.

21. Ofek teaches dependent claim 31 by the following:

"wherein the HSM system specifies the size of an archive unit" at col. 30 lines 14-25.

22. Ofek teaches dependent claim 32 by the following:

"wherein the HSM system specifies the size of a region of updates" at col. 31 lines 33-54.

23. Ofek teaches dependent claim 33 by the following:

"wherein the HSM system specifies a memory allocation limit for the stream of data applicable to said source storage location" at col. 36 line 30.

24. Ofek teaches dependent claim 34 by the following:

"wherein the HSM system moves at least one portion of the stream of data such that said memory allocation limit is not exceeded" at col. 36 lines 30-38.

25. Ofek teaches dependent claim 35 by the following:

"wherein the HSM system identifies a stream of data that has at least one identifiable region of updates" at col. 29 lines 33-36.

26. Claims 9-11 and 36-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ofek et al. (U.S. Patent 6,385,706) and Coy et al. (U.S. Patent 5,644,766) as applied to claim 1 above, and further in view of Barve et al. ("A Simple and Efficient Parallel Disk Mergesort").

27. Ofek teaches a form of migrating information from one source to another through the use of streams at col. 34 lines 57-65 and col. 35 lines 6-7. Ofek does not teach any form of identifying the type of data stream. Barve does identify these types of data streams at pg. 234-235. It would be obvious to one ordinarily skilled in the art at the time of the invention to identify these types of data streams. By identifying the streams, the data can be stored in a more efficient manner. Because of the increase of processor speeds, the bottleneck has now become disk access, or the time to read data from memory. By organizing the data, it can be read faster thus allowing faster run times.

28. Barve teaches dependent claims 9 and 36 by the following:

"wherein said identifying of said at least one portion for migration includes identifying a type of stream of data" at pg. 235.

29. Barve teaches dependent claims 10 and 37 by the following:

"said type of stream of data is an append-only file" at pg. 235.

30. Barve teaches dependent claims 11 and 38 by the following:

"said type of stream of data is a first storage block write only file" at pg. 235.

31. Claims 14 and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ofek et al. (U.S. Patent 6,385,706) and Coy et al. (U.S. Patent 5,644,766) as applied to claim 1 above, and further in view of Boebert et al. (U.S. Patent 5,864,863).

32. As per claims 14 and 41, Ofek teaches a hierarchical storage management stored across several nodes. He does not teach that the data is stored from a nonsecure site to a secure site. Boebert teaches this type of security in Fig. 12. It would be obvious to one ordinarily skilled in the art at the time of the invention to use this type of security. The information that is stored is valuable to its users. Enforcing security does not allow access to hackers or others who may cause harm when given access to the data. Adding security ensures that only those who have privileges can access the data.

33. Claims 15 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ofek et al. (U.S. Patent 6,385,706) and Coy et al. (U.S. Patent 5,644,766) as applied to claim 1 above, and further in view of Sawada (U.S. Patent 5,784,646).

34. As per claims 15 and 40, Ofek teaches a hierarchical storage management stored across several storage nodes. He does not teach that the data streams move from an on-line location to an off-line location. Sawada teaches this type of storage in Fig. 7. It would be obvious to one ordinarily skilled in the art at the time of the invention to move data from online storage to offline storage. By moving data to offline storage, more online storage is made available, thus freeing online resources.

35. Claims 17, 24, and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ofek et al. (U.S. Patent 6,385,706) and Coy et al. (U.S. Patent 5,644,766) as applied to claim 1 above, and further in view of Usdin et al. ("XML: Not a Silver Bullet, But a Great Pipe Wrench").

36. As per claims 17, 24, and 42, Ofek teaches that metadata stores the relationships of data in his hierarchical storage system. He does not teach that the metadata is formatted through World Wide Web components. Usdin teaches this feature on pg. 125. Usdin also teaches that XML can be used to process metadata at pg. 129. It would be obvious to one ordinarily skilled in the art at the time of the invention to use World Wide Web components to with the metadata. By using a World Wide Web component, the metadata can provide interoperability between applications that exchange machine-understandable information on the Web.

37. Claims 18, 25, and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ofek et al. (U.S. Patent 6,385,706) and Coy et al. (U.S. Patent 5,644,766) as applied to claim 1 above, and further in view of Glebov et al. (U.S. Patent 6,343,265).

38. As per claims 18, 25, and 43, Ofek teaches a method of storing data to a map of storage locations found across a network at Fig. 5 and col. 6 lines 21-22. He does not teach that the metadata is formatted according to XML, DCOM, or Java. Glebov does teach the use of formatting data relations with XML at col. 4 lines 51-67. It would be obvious to one ordinarily skilled in the art at the time of the invention to use XML to access the metadata. XML is a common format used to model metadata. It allows the metadata to be shared across several different machines.

39. Claims 19-20 and 44-45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ofek et al. (U.S. Patent 6,385,706) and Coy et al. (U.S. Patent 5,644,766) 1 as applied to claim 1 above, and further in view of Lam (U.S. Patent 5,564,037).

40. Ofek teaches a method of storing data to a map of storage locations. Ofek teaches that this method could be used in a hierarchical storage management at col. 14 lines 60-63. He does not teach the data migration details that are a part of hierarchical storage management. Lam does teach these details at col. 1 lines 44-66. It would be obvious to one ordinarily skilled in the art at the time of the invention to use data migration. By migrating data, which is infrequently used or accessed, space can be freed on the file server. Data migration allows for a more efficient method of storing files. Those files that are accessed frequently remain on faster accessed storage, while the less frequently accessed files are moved to slower storage.

41. Lam teaches dependent claims 19 and 44 by the following:

"the storage for said at least one portion in said first storage location is freed for use by the system after said at least one portion is moved to said second storage location" at col. 1 lines 61-64.

42. Lam teaches dependent claims 20 and 45 by the following:

"said stream of data is a sparse file" at col. 3 lines 30-40.

43. Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ofek et al. (U.S. Patent 6,385,706) and Coy et al. (U.S. Patent 5,644,766) as applied to claim 1 above, and further in view of Salas et al. (U.S. Patent 6,233,600).

44. As per claim 26, Ofek teaches that metadata stores the data relationships at col. 11 lines 58-60. He does not teach that the metadata is stored in a jet database. Salas does teach the use of a jet database to store the relationships between data at col. 4 lines 28-32 and col. 13 lines 3-6.

It would be obvious to one ordinarily skilled in the art at the time of the invention to use a jet database to store the data relationships. A jet database is a commonly used database. By storing metadata in a jet database, the system can query this database to obtain the needed information. The metadata can then be used to access to the data found in storage.

Conclusion

CITED PRIOR ART

Ofek et al.	U.S. Patent 6,385,706
Sawada, Yoshiaki	U.S. Patent 5,784,646
Lam, Wai T.	U.S. Patent 5,564,037
Salas et al.	U.S. Patent 6,233,600
Coy et al.	U.S. Patent 5,644,766
Barve et al.	"A Simple and Efficient Parallel Disk Mergesort"
Boebert et al.	U.S. Patent 5,864,683
Usdin et al.	"XML: Not a Silver Bullet, but a Great Pipe Wrench"
Glebov et al.	U.S. Patent 6,343,265

46. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Venkatesh et al.	U.S. Patent 6,499,039

47. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

48. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

49. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steve Schrantz whose telephone number is (703) 305-7690. The examiner can normally be reached on Mon-Fri. 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Breene can be reached on (703) 305-9790. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 746-7239 for regular communications and (703) 746-7238 for After Final communications. The TC2100 customer service number is (703) 306-5631.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

Steve Schrantz
April 10, 2003

SRIRAMA CHANNAVAJJALA
PRIMARY EXAMINER